

## **Worksheet to Identify Potential Indicators for Ecological Monitoring**

You return to visit your park in 20 years and walk through the park with the current resource manager. The manager tells you about the current condition of the natural resources, the management issues, and threats of the day. What would that person describe to you?

*Building new power plants. 11 plants within 25 miles. Altered hydrographs on the Missouri due to dam, affecting forest succession. May lose the forest. Small mammals may contribute to degradation of archeological resources. New exotic species. Deer effects on vegetation.*

What are the park's most significant natural resources (e.g., the river and its tributaries, caves and cave fauna, rare plant communities, elk herd)?

*The river systems, their terraces and floodplain.*

What does your park contribute to regional biological diversity (e.g., what natural resources are preserved and protected at your park that are altered or threatened throughout the rest of the region)?

*Bald eagle nest. 200 acre chunk of native prairie that is not grazed. An island of habitat within an agrarian landscape. Some old cottonwoods (may have the 3<sup>rd</sup> largest).*

What park-specific legislative mandates direct the park to monitor a particular natural resource at your park.

*There is not other than a few lines saying to having something reminiscent of Lewis and Clark.*

What federal and state-listed threatened and endangered species are known to occur in the park?

*Bald eagle. Potential for piping plovers and least tern. Pallid sturgeon in the river. Potential for state listed plants but unlikely.*

What is that status of your park's management plans?

*New GMP planned for 05. Need new RMP and FMP. Have a good Prairie Management plan.*

What is currently being monitored at or near the park by NPS or other entities (e.g., plants by fire effects program, plants by LTEM, exotic plants by exotic plant teams, birds by Breeding Bird Survey, butterflies, stream by USGS, Christmas bird count, weather data, NRCS photography, visitors by park staff, state roadside counts --- use the checklist below)?

*Air: The closest monitoring you can depend on is at THRO. Power plants do have stations.*

*Amphibian: No.*

*Birds: Center High School in Center and Hazen High School do an unsystematic bird count in the spring. Has been going on for the past 10 years at least. Terry has this info. Corp and FWS on the banks for terns and plovers.*

*Fire: Fire Effects monitoring plants.*

*Fish: A 3-year USGS project occurred – get names from park staff.*

*Geology: No.*

*Mammals: No.*

*Meteorology: Have a system, trying to get a RAWS system.*

*Pests: Park has gypsy moth traps they send into the state. Been going on for 10 years or so. State parks are monitoring for West Nile.*

*Pesticides No.*

*Reptiles: No.*

*Soils: No.*

*Sound: No.*

*Vegetation: Fire Effects and EPMT. Rod is GPSing major plant communities.*

*Visitors Traffic counters are parking lot entrances. Just completed a major visitation survey project.*

*Visual Landscape: No parkwide. Photos at spurge treatment areas. Park measurement of bank erosion. Rick Inglis from NPS FT. Collins is involved.*

Water Quality: USGS takes water quality from the bridge. Potable water comes from the city.

Wildlife or Plant Disease: *Has Dutch elm but not monitoring. Forest fungus (heart rot, formes, shell fungus), but not truly monitored.*

What are the stressors on park resources? What are the sources of each stressor?

*Altered hydrograph on river and affect on floodplain forest, shoreline, etc.. Air quality from power plants. Exotic plants, brome, thistle, wormwood, crested wheat (brome is the biggy). Potential high deer levels. Forest diseases such as Dutch elm disease, fungus. Gophers affecting a park management objective. Potential climate change. The absence of grazing although may be less important because of the cultivated history of the park.*

What potential management actions in the future may require monitoring (e.g., potential species reintroductions, land acquisitions, commercial uses)?

*Have toyed with the idea of bison and/or horses to get grazing back.*

What would your partners like you to monitor?

*Exotic plants.*

Vital signs are: 1) sensitive enough to provide early warning of change, 2) have low natural variability, 3) can be accurately and precisely measured, 4) have costs and effort of measurement that are not prohibitive, 5) have monitoring results that can be interpreted and explained, 6) are low impact to measure, and 7) have measurable results that can be replicated with various personnel. Off the top of your head, look into your crystal ball and choose several vital signs to monitor over time to track the condition of natural resources within your park (items can range from broad, e.g., the stream, to narrow, e.g., a particular species). What are those vital signs? Rank them in order of importance.

*Vegetation in regards to exotic plants*

*Prairie community, including the restoration efforts*

*Tree regeneration in the forest*

*Air quality in regards to power plants*

*Deer abundance*

*Burrowing/digging mammals*

*Water quality, perhaps with emphasis on the Knife River*